

Werby

L A B O R A T O R I E S • I N C .

Consulting and Analytical Chemists

88 Broad Street • Boston 10 • Massachusetts • Liberty 2-0739

July 16, 1970

Samples of : 37 MM. MEMBRANE FILTERS

Marked : FOR MICROSCOPIC ANALYSES (Phase Contrast Method at 430X)

Submitted by : Construction Products Division

W. R. Grace & Co.

Cambridge, Massachusetts

02140

Note: Values reported are based upon an assumed sampling volume equal to 180,000 CC.

<u>SAMPLE MARKED</u>	<u>TOTAL FIBERS PER CC.</u>	<u>FIBERS GREATER THAN 5 MICRONS PER CC.</u>
L. I. # 1	5.7	2.6
L. I. # 2	1.4	1.1
L. I. # 3	1.8	1.3
L. I. # 4	0.4	0.4

WERBY LABORATORIES, INC.

Russell T. Werby, Director



CAMBF E

cc: FWE

CONFIDENTIAL

06190076

TO: R. E. SCHNEIDER

DATE: July 6, 1970

FROM: R. L. BERMAN

SUBJECT: Membrane Filter Field
Test

cc: F. W. Eaton

The following report was written to
explain the membrane filter field test on

~~Mono-Kote application.~~

R. L. Berman
R. L. BERMAN

RLB:jrs
Attachment

Exhibit 2

MEMBRANE FILTER FIELD TEST REPORT

MONO-KOTE APPLICATION

On June 29, 1970, R. L. Berman, F. W. Eaton, and E. Van Vliet visited the construction site of Grumman Aircrafts Data Processing Research Center in Bethpage, N. Y.. Austin Co. was the general contractor, while McKeown Plasterer was the Mono-kote applicator. 06190077

At the site, four tests were conducted as per the procedure outlined in "Membrane Filter Method of Atmospheric Sampling" by Peter Kostic. It was the purpose of these tests to determine whether or not the threshold limit value of asbestos fibers, as set by the American Conference of Governmental Industrial Hygienists, was exceeded in certain areas. The ACGIH has set a limit at 12 fibers longer than 5 microns per cubic centimeter of air.

Test Number 1 was run on a Mono-Kote applicator. The subject's duties were basically those of a foreman, however, he did actually apply Mono-Kote for a period of 35 minutes.

Test Number 2 was run on a Mono-Kote applicator also. During the entire length of his sampling period, he was applying Mono-Kote. The first subject was spraying a steel structure approximately 15 feet overhead. The second man was on a platform spraying the steel from a distance of about 3 feet.

The third test was run on a man who was mixing Mono-Kote with water. He also unloaded Mono-Kote bags from a trailer and carried them to the mixing area. In the mixing area, there were two men, each working on a separate mixer. Only one of these men was tested.

During normal operating conditions, each man mixes between 13 and 14 batches an hour. There are three 50 pound bags of Mono-Kote and approximately 37.5 gallons of water per batch. Each batch will normally cover 90 ft.² of surface area if applied to a thickness of one inch.

The fourth area tested was the general vicinity in and around the construction site. The test subject spent time where Mono-Kote was being applied in the basement, on the second and third floors of the building, outside of the building, and in the general area where Mono-Kote was being mixed.

For further detailed information on the area tested, time of testing, and other comments, please refer to the actual sampling sheets or the sheet marked "Notes".

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On June 30, R. L. Berman took the sampled membrane filters to Werby Laboratories in Boston for analysis and fiber counting. The procedure used was as follows:

1. A microscope slide is cleaned.
2. An identification number corresponding to the filter sample is placed on the slide.
3. The millipore monitor is then opened and a pie shaped wedge is cut from the filter.
4. A mixture of two solvents is then placed on the microscope slide.
5. The pie shaped wedge is placed on top of the solvent mixture.
6. A cleaned square of glass is then placed on top of the filter wedge and depressed.
7. The slide is then left to dry, and later is analyzed.

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The analysis of the slide is done using a phase contrast microscope. The microscope is a Bausch & Lomb Model TBT-6B Dynazoom. It is normally operated at a magnification of 430X. There are adjustments so that the slide can be moved in any of the three dimensions. In the eye piece of the microscope is a set pattern (See Figure 1). Only the lightly shaded portion of the pattern is used. The number of fibers seen in this area is recorded. To obtain the size of the fibers, they are compared to the circles above and below the pattern. Number 6 circle corresponds to 4.8 microns in diameter; Number 7 to 5.7 microns. As can be seen in the figure, there are 6 total fibers, but only 1 which is larger than 5 microns in size. That one being the fiber in the upper left hand block.

This same procedure is used in 20 distinct fields and averages for total fibers and fibers greater than 5 microns in length are obtained. By use of appropriate formulae, these averages are converted to numbers, which are expressed as fibers longer than 5 microns in size per cubic centimeter of air. The values obtained ranged from a high of 2.6 fibers to a low of 0.4 fibers longer than 5 microns per cubic centimeter of air.

The results, as obtained by Werby Laboratories, are listed on the actual sampling sheets. As can be seen, the values are well within the threshold limits as established by ACGIH.

WRITTEN BY: R. L. Berman
CHECKED BY: F. W. Eaton
DATE: 7/6/70

CONFIDENTIALINDUSTRIAL HYGIENE SURVEY
ZONOLITE DUST CONTROL PROGRAMConstruction Products Division
W. R. Grace & Co.SAMPLING

06190079

Sample Number 3875Sample Number Line Islands # 1Plant Location Line Islands - CommonDate of Sampling 6/24/70Job or Operation Sampled MonoKote

Location in basement of Building

Overhead Deck SteelStructureRespirator worn by operator? Yes ☐ No ☒ Manufacturer & Type _____

Atmospheric Conditions

- a. Outside - Clear Cloudy Rain Snow
 b. Inside draft - None Slight Moderate Excessive Direction _____
 c. Visible dust - Slight Moderate Heavy

General Housekeeping: NO VISIBLE DUST, WET AND SOME DRYRemarks: MONOKOTE ON THE FLOOR.
APPLICATOR SPRAYING APPROXIMATELY 10 FT OVERHEAD.Sampled By P. BERNY / F. EATEN Date Shipped to Lab 6/24/70LABORATORYTotal fiber count 5.7 Fibers longer than 5 micron per cc 2.6

Comments:

Analysis by R. T. Werby Date June 30, 1970Laboratory Merby Laboratories, Inc.

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W. R. Grace & Co.

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SAMPLING

Pump Number 3978 Pump Actual
 Sample Number LINE ISLAND #2 Time Finished 11:59:54 11:17
 Plant Location LINE ISLAND - CEMENT Time Started 10:10:10 9:47
 Date of Sampling 6/29/70 Elapsed Time 89.14 90 min
 Job or Operation Sampled Volume Sampled 180,000 cc

MONOKOTE APPLICATION IN THE (Volume sampled = Elapsed time/min. X 2000)
Basement of Building SPRAYING STEEL

Platform approx. 3 ft overhead

Platform approx. 3 ft overhead
 Respirator worn by operator? Yes X No Manufacturer & Type DUST MASK

Atmospheric Conditions

- a. Outside - Clear Cloudy Rain Snow
 b. Inside draft - None Slight Moderate Excessive Direction
 c. Visible dust - Slight Moderate Heavy

General Housekeeping:

NO VISIBLE DUST, BUT PLATFORM HAS
WET MONOKOTE ON IT

Remarks:

Sampled By R. BARMAN / F. EATON Date Shipped to Lab 6/30/70

LABORATORY

Total fiber count 14 Fibers longer than 5 micron per cc 11

Comments:

Analysis by R. T. Henry Date 6/30/70

Laboratory Henry Labs Inc.

CONFIDENTIALINDUSTRIAL HYGIENE SURVEY
ZONOLITE DUST CONTROL PROGRAMConstruction Products Division
W. R. Grace & Co.06190081SAMPLING

Pump Number 3978
 Sample Number Long Island # 3
 Plant Location Long Island - German
 Date of Sampling 6/29/70
 Job or Operation Sampled Mixing Kete
Mixing; also unloading MK
Bags from Trailer to Mixing
House

	<u>Pump</u>	<u>Actual</u>
Time Finished	<u>1751.55</u>	<u>2:07</u>
Time Started	<u>1649.54</u>	<u>12:37</u>
Elapsed Time	<u>87.01</u>	<u>90 min</u>
Volume Sampled	<u>150,000</u>	<u>cc</u>

(Volume sampled = Elapsed time/min. X 2000)

pirator worn by operator? Yes No X Manufacturer & Type

• Atmospheric Conditions
 a. Outside - Clear Cloudy Rain Snow
 b. Inside draft - None Slight Moderate Excessive Direction
 c. Visible dust - Slight Moderate Heavy

• General Housekeeping: BUT HEAVY WHEN SHAKING BAGS INTO
MIXER. 2 MIXERS UNDER SAME ROOF

• Remarks:

Sampled By R. BERMAN / F. EATON Date Shipped to Lab 6/30/70

LABORATORY

total fiber count 1.8 Fibers longer than 5 micron per cc 1.3

Comments:

Analysis by R. T. Henry Date 6/30/70

Laboratory Henry Labs, Inc.

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SAMPLING

Sample Number 3875
 Sample Number 100 Islands # 4
 Sample Location 100 Islands - (Greenland)
 Date of Sampling 6/30/70
 Name of Operation Sampled _____
 Description of Work APPLIED IN GENERAL WORKING
AREAS? (See Below)
 Pump _____
 Time Finished 749.22 2:14
 Time Started 110.71 12:44
 Elapsed Time 88.51 90 min
 Volume Sampled 180.000 cc
 (Volume sampled = Elapsed time/min. X 2000)

Respirator worn by operator? Yes _____ No X Manufacturer & Type _____

Atmospheric Conditions

- a. Outside - Clear Cloudy Rain Snow
 b. Inside draft - None Slight Moderate Excessive Direction _____
 c. Visible dust - Slight Moderate Heavy

General Housekeeping: (1) 45 min in GENERAL AREA of APPLYING MK in BASEMENT
(2) 15 min ON 2ND AND 3RD FLOOR

Remarks: (3) 15 min OUTSIDE, WITHIN 20 FT. OF BUILDING.
 (4) 15 min in GENERAL AREA of MK MIXING

Sampled By R. BERMAN / F. EATON Date Shipped to Lab 6/30/70

LABORATORY

Total fiber count 0.4 Fibers longer than 5 micron per cc 0.4

Comments:

Analysis by F. T. Herby Date 6/30/70

Laboratory

100 Islands - 100 Islands

-NOTES-

SAMPLE LI #1

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- (1) Foreman of application crew
- (2) Spent 35 minutes applying Mono-Kote.
- (3) During balance of time; moving equipment, coffee break, directed his workers, checked mixing operation.

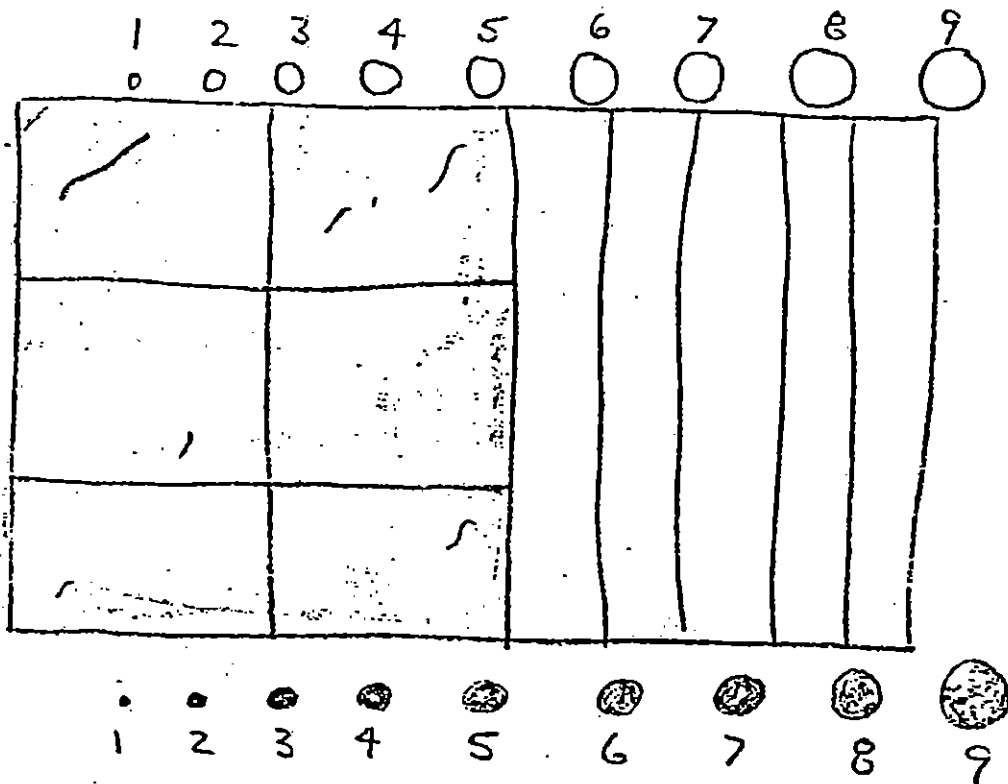
SAMPLE LI #2

- (1) Platform operator
- (2) Wore glasses and dust mask.
- (3) Applying MK approximately 3 feet from steel.

SAMPLE LI #3

- (1) Mixing Mono-Kote and unloading trailer.
- (2) 2 mixers under canopy

Figure 1



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